

# ***VRX932LA***

## ***User's Guide***



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***Important Safety Instructions***

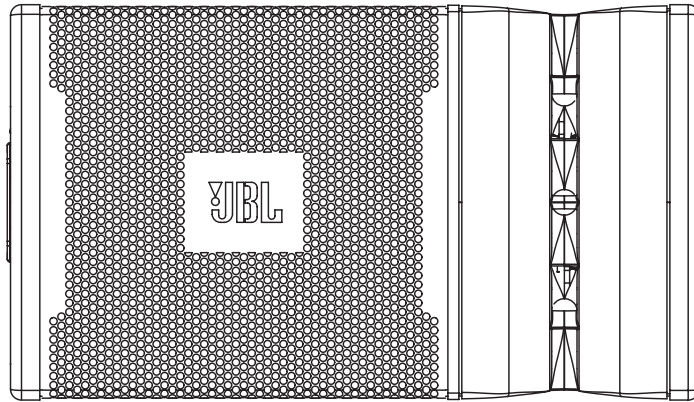
The VRX932LA loudspeaker covered by this manual is not intended for fixed installation in outdoor or high moisture environments. Moisture can damage the speaker cone and surround and cause corrosion of electrical contacts and metal parts. Avoid exposing the speakers to direct moisture. Keep speakers out of extended or intense direct sunlight. The driver suspension will prematurely dry out and finished surfaces may be degraded by long-term exposure to intense ultra-violet (UV) light.

The VRX932LA speaker can generate considerable energy. When placed on a slippery surface such as polished wood or linoleum, the speaker may move due to its acoustical energy output. Precautions should be taken to assure that the speaker does not fall off a stage or table on which it is placed.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9. Only use attachments / accessories specified by the manufacturer.
10. Use only with a cart, stand, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart / apparatus combination to avoid injury from tip-over.
11. Refer all servicing to qualified service personnel. Servicing is required when an apparatus has been damaged in any way, such as power-cord or plug is damaged, liquid has been spilled, or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
12. To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
13. Hearing damage, prolonged exposure to excessive SPL, the loudspeaker is easily capable of generating sound pressure levels (SPL) sufficient to cause permanent hearing damage to performers, production crew and audience members. Caution should be taken to avoid prolonged exposure to SPL in excess of 90 dB.

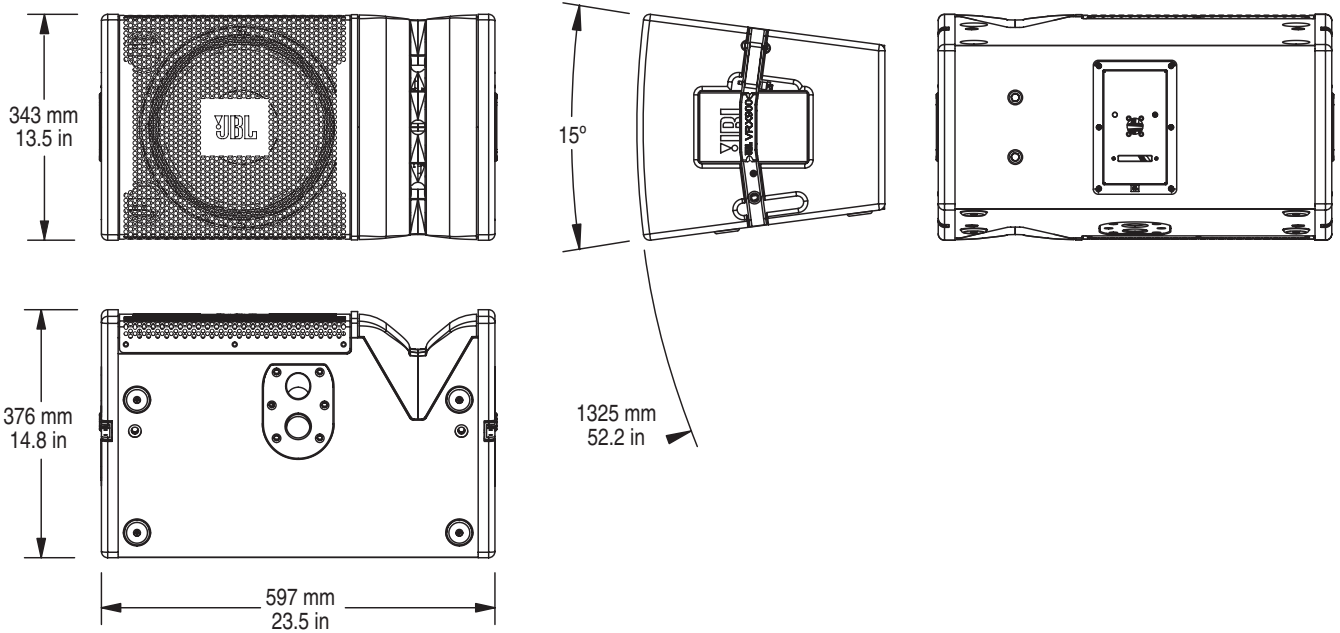


# INTRODUCTION TO THE VRX932LA



The VRX932LA is a two-way, line-array loudspeaker system intended for use in arrays of up to six enclosures. Three high-frequency drivers are mounted to the Constant Curvature waveguide which is designed so that multiple enclosures may be arrayed with no discontinuity in the vertical coverage pattern. As a result, the array will behave in much the same way as would a single loudspeaker. Array coverage may be adjusted by means of the Array Configuration Selector (ACS), a feature that provides amplitude shading (see page 6) when the system is used in passive mode. Integral rigging hardware, a dual angle pole socket and an accessory array frame provide for a variety of mounting and suspension options.

## Dimensional Drawings



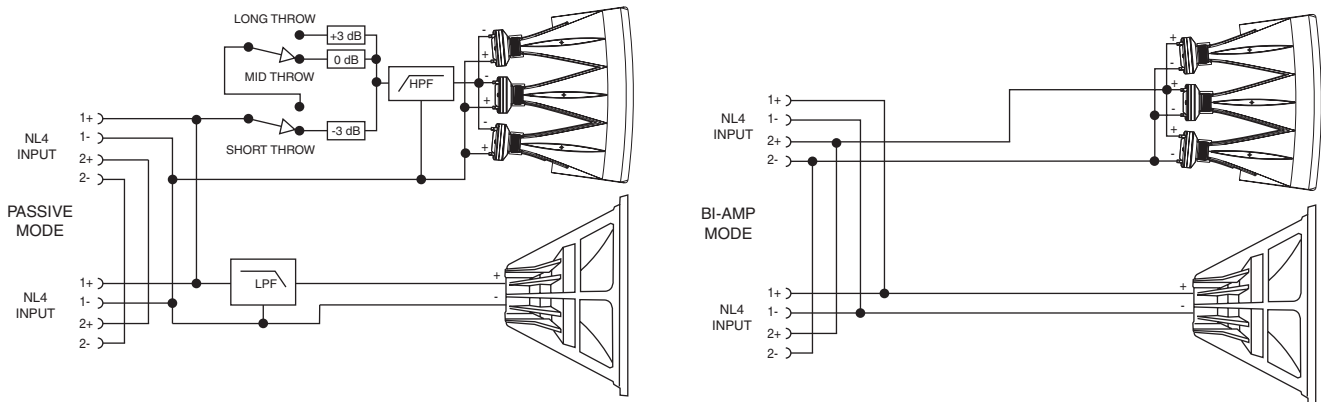
# SPECIFICATIONS

## VRX932LA - 12", two-way, line-array loudspeaker system

System Type:	12" two-way, line array loudspeaker system
Frequency Range (-10 dB):	57 Hz - 20 kHz
Frequency Response ( $\pm 3$ dB):	75 Hz - 20 kHz
Coverage Pattern:	100° x 15° nominal (horizontal x vertical)
Crossover Modes:	Bi-amp / passive, externally switchable
Crossover Frequency:	1.2 kHz
Power Rating	Passive: 800 W / 1600 W / 3200 W
(Continuous <sup>1</sup> / Program/ Peak):	Bi-amp LF: 800 W / 1600 W / 3200 W Bi-amp HF: 75 W / 150 W / 300 W
System Maximum SPL <sup>2</sup> :	130 dB SPL peak (passive) LF: 130 dB HF: 139 dB
System Sensitivity (1w @ 1m):	95 dB SPL (passive mode) LF: 95 dB HF: 114 dB <sup>3</sup>
LF Driver:	1 x JBL 2262H 305 mm (12 in) Differential Drive <sup>®</sup> woofer with neodymium-magnet and dual voice-coils
HF Driver:	3 x JBL 2407J, 25.4 mm (1 in) voice-coil, neodymium magnet compression driver
Nominal Impedance:	Passive: 8 ohm Bi-amp LF: 8 ohms Bi-amp HF: 8 ohms
Active Tunings:	Tunings available at <a href="http://www.jblpro.com">www.jblpro.com</a>
Enclosure:	18 mm, 11-ply birch plywood.
Suspension / Mounting:	Suspension requires optional VRX932LA-AF line-array frame kit / Dual angle 35 mm pole socket
Finish:	Black DuraFlex™ finish
Grille:	Powder coated, black, 16-gauge perforated steel with acoustically transparent foam
Input Connectors:	Neutrik <sup>®</sup> Speakon <sup>®</sup> NL-4 (x2)
Dimensions (H x W x D):	349 mm x 597 mm x 381 mm (13.75 in x 23.5 in x 15.0 in)
Net Weight:	21.8 kg (48 lb)
Optional Accessories:	VRX932LA-AF: Suspension array frame SS2-BK: Tripod speaker stand SS3-BK: Satellite speaker pole, 41 in (1041 mm) SS4-BK: Adjustable satellite speaker pole to be used with the SRX718S only.

<sup>1</sup> IEC filtered noise with 6 dB crest factor, 2 hrs / <sup>2</sup> "Frequency Range" and "Frequency Response" are based on half-space conditions / <sup>3</sup> HF driver sensitivity is based on a measurements averaged between 1.5KHz - 16KHz

### Functional Block Diagram



# AMPLITUDE SHADING

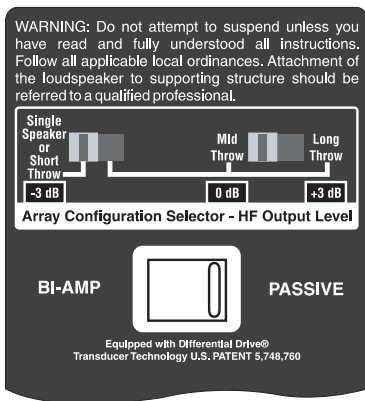
## Amplitude Shading

Amplitude shading is a technique that allows the coverage pattern of a loudspeaker array to be shaped by adjusting the relative acoustic output of some of the devices in the array. Most often, array shading involves only the mid and high-frequency sections of the array. In a simple system consisting of three VRX932LAs, the lower speaker (which covers the nearest listeners) may have its high-frequency output reduced. At the same time, the upper speaker may have its high frequency output increased. The overall sound-power in the room is unchanged but the distribution of acoustic energy to the audience is far more uniform. Amplitude shading of a VRX932LA array may be accomplished in passive or bi-amplified systems.

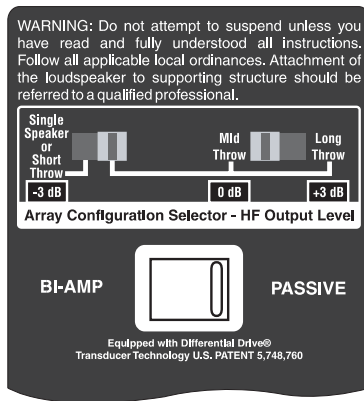
## Array Configuration Selector (ACS)

In passive mode, the Array Configuration Selector may be used. The -3 dB position will typically be used for the speaker(s) in an array that are covering the nearest listening area. The +3 dB position will be used for the speaker(s) covering the more distant areas; or to compensate for the low-frequency build-up resulting from mutual coupling of multiple woofers in an array.

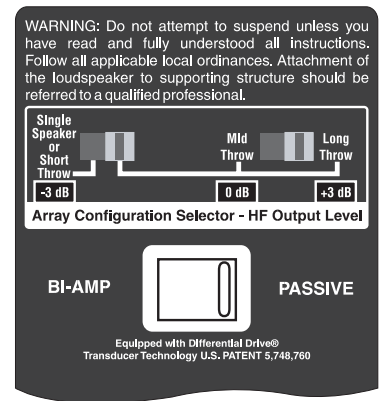
Short Throw (-3 dB)



Medium Throw (0 dB)

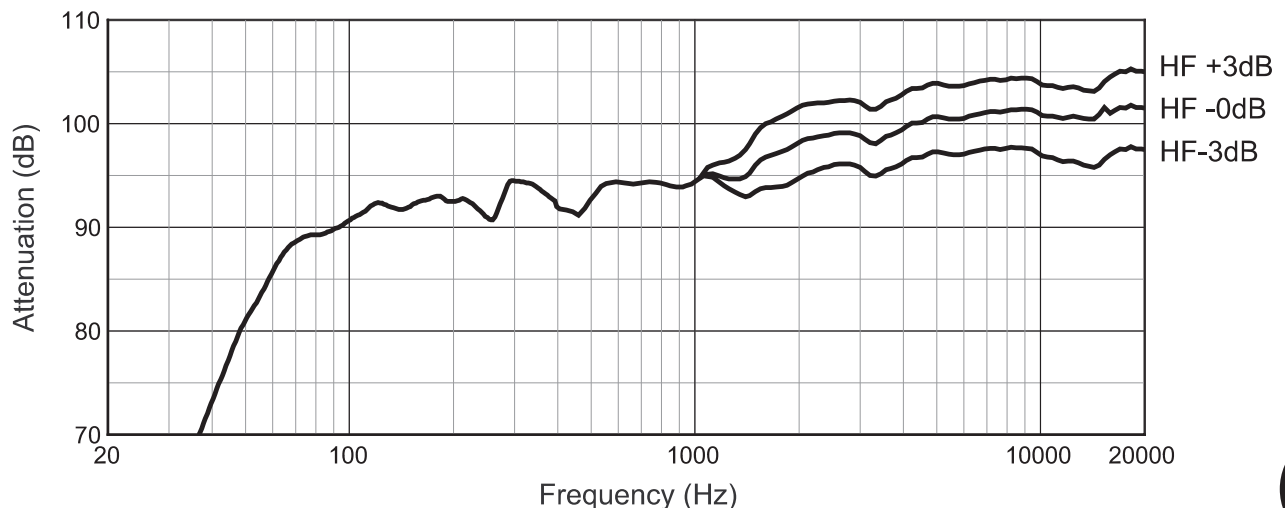


Long Throw (+3 dB)



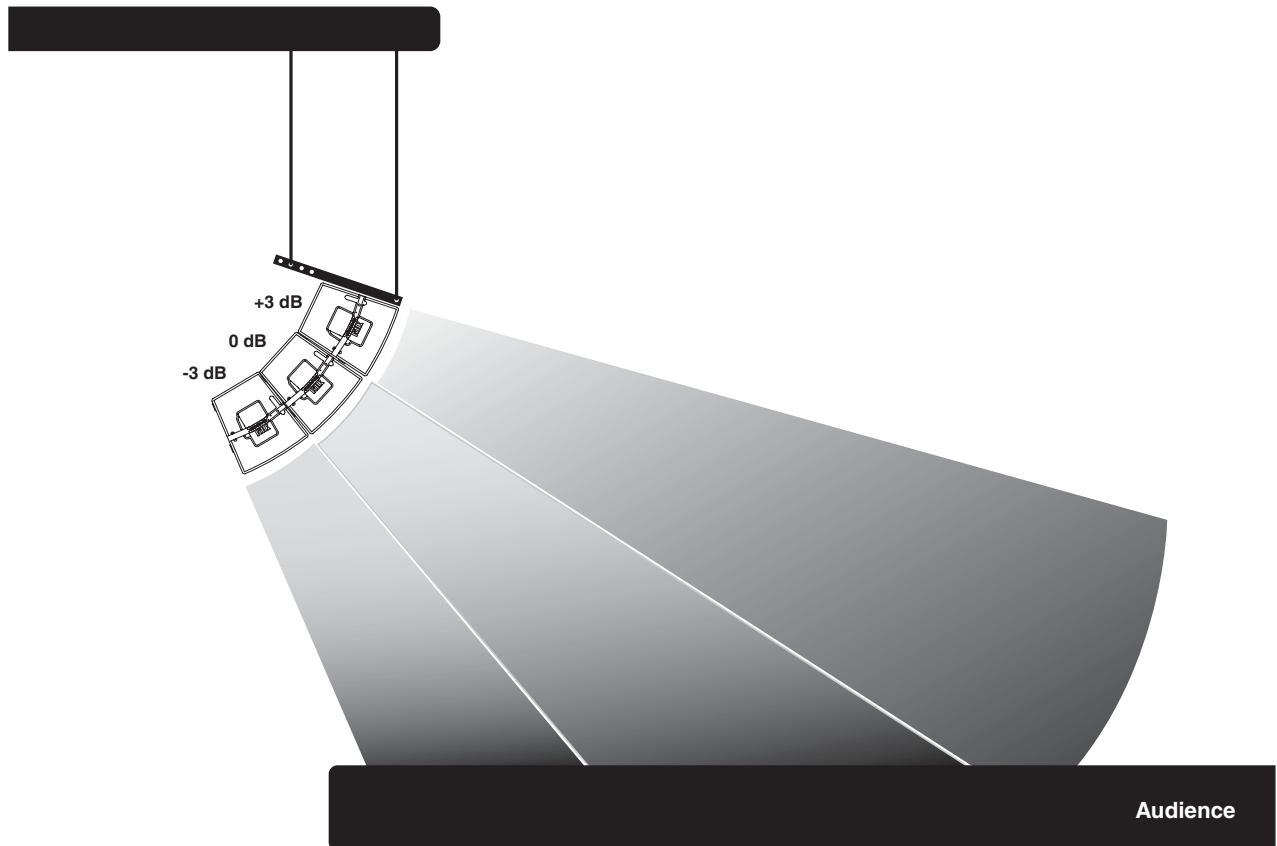
## Frequency Response

The frequency response graph represents measurements from a single VRX932LA speaker, applying the three different ACS settings: +3dB, 0dB, -3dB.



### **Array Configuration Selector (ACS)**

Below is an example of applying the ACS in a three-speaker array. In this particular configuration, the ACS on the top speaker is set at +3 dB, the middle speaker at 0 dB, and the bottom speaker -3 dB.



### **Bi-Amplified System**

In a bi-amplified system, array shading is accomplished by connecting separate amplifier channels to the HF section of each VRX932LA. In larger arrays, a single amplifier channel may be used for two adjacent loudspeakers. Array shading is then accomplished by adjusting the gain of the HF amplifier channels. For extremely precise control over system performance, it may also be desirable to dedicate an individual system controller output to each HF amplifier channel.

# SYSTEM PROCESSOR TUNINGS

The following table represents the JBL-approved tuning for the BSS366. If you have a processor for which VRX932LA settings have not been created, the table may be used as a starting point to set your processor. Keep in mind that various processors respond to settings in different ways, so some additional fine-tuning may be required. For updated tunings, or if you own a dbx DriveRack™ or BSS processor that does not include VRX932LA tunings, these may be downloaded from [http://www.jblpro.com/pages/tunings/tunings\\_main.htm](http://www.jblpro.com/pages/tunings/tunings_main.htm).

Parameter	Single Box		
	Output 1	Output 2	Output 3
Output Name	SUB	LOW	HIGH
Output Source	A	A	A
Output Gain	0dB	0dB	-15.0
Output Limit			
Output Delay		0.0 ms	0.25 ms
Output Delay Link		n/a	
Polarity		NORMAL	INVERT
Output Lo Shape		LR12	LR24
Output Lo Frequency		70Hz	1.11KHz
Output Hi Shape	LR-48	LR-48	
Output Hi Frequency	80Hz	1.41KHz	OUT
Output EQ1 Type		BELL	BELL
Output EQ1 Frequency		637Hz	3.86KHz
Output EQ1 +/-		-3.0	-6.0
Output EQ1 Bandwidth		0.3	0.7
Output EQ2 Type			HIGH 12
Output EQ2 Frequency			13.5KHz
Output EQ2 +/-			9.0
Output EQ2 Bandwidth			
Output EQ3 Type			BELL
Output EQ3 Frequency			2.3KHz
Output EQ3 +/-			-4.0
Output EQ3 Bandwidth			0.4
Output EQ4 Type			BELL
Output EQ4 Frequency			1KHz
Output EQ4 +/-			-12.0
Output EQ4 Bandwidth			0.15
Output EQ5 Type			
Output EQ5 Frequency			
Output EQ5 +/-			
Output EQ5 Bandwidth			
Output EQ6 Type			
Output EQ6 Frequency			
Output EQ6 +/-			
Output EQ6 Bandwidth			
Output EQ7 Type			
Output EQ7 Frequency			
Output EQ7 +/-			
Output EQ7 Bandwidth			

Multiple Box		
Output 1	Output 2	Output 3
SUB	LOW	HIGH
A	A	A
0dB	0dB	-5.0
	0.0 ms	0.25 ms
	n/a	
	NORMAL	INVERT
	LR12	LR24
	70Hz	1.11KHz
LR-48	LR-48	
80Hz	1.41KHz	OUT
	BELL	BELL
	637Hz	3.73KHz
	-3.0	-5.0
	0.3	0.35
	BELL	BELL
	870 Hz	5.27KHz
	2.0	-4.4
	0.3	0.45
		BELL
		1.68KHz
		-5.0
		0.4
		BELL
		13KHz
		6.0
		0.20
		BELL
		2.55KHz
		-10.0
		0.7
		BELL
		1KHz
		-10.0
		0.1
		BELL
		8.57KHz
		-2.0
		0.1

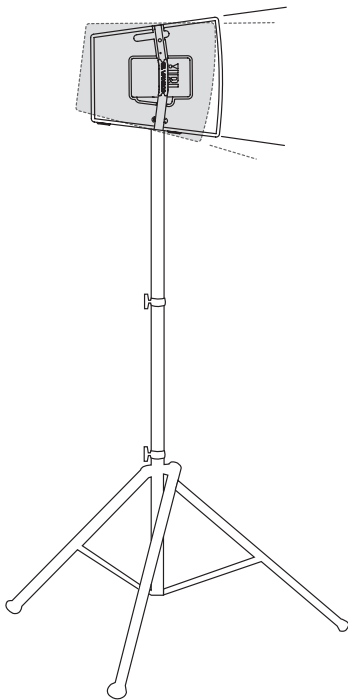
## DEPLOYING THE SYSTEM

The VRX932LA is a flexible speaker system that can be deployed in ground-supported or suspended applications. The following information will help you set up your VRX932LA system safely and effectively.

### **POLE AND TRIPOD SAFETY WARNINGS!**

When using stands or poles, be sure to observe the following precautions:

- Check the stand or pole specification to be certain the device is designed to support the weight of the speaker. Observe all safety precautions specified by the manufacturer.
- Be certain that the surface on which the system is to be stacked is flat, stable and solid.
- Route cables so that performers, production crew, and audience will not trip and topple the speakers.
- Inspect the stand (or pole and associated hardware) before each use and do not use equipment with worn, damaged, or missing parts.
- Do not attempt to place more than two VRX932LA loudspeakers on a stand or pole.
- When mounting two VRX932LA speakers on a pole or tripod, integral rigging hardware must be used to secure the speakers to each other.
- Always be cautious when deploying the system outdoors. Unexpected winds may topple a system. It may be necessary to place additional weight (i.e. sandbags) on the base of the stand to improve stability. Avoid attaching banners or similar items to any part of a speaker system. Such attachments could act as a sail and topple the system.
- Unless you are confident that you can handle the weight of the speaker, ask another person to help you get it onto the tripod stand or pole.
- One or two VRX932LA loudspeakers may be mounted onto either a JBL SS2-BK tripod stand or a JBL SRX718S subwoofer with an SS4-BK adjustable pole. **Do not stack more than two VRX932LA speakers on a pole.** When pole mounting on the SS4-BK, the pole is not to be extended beyond 1448 mm (57 in).

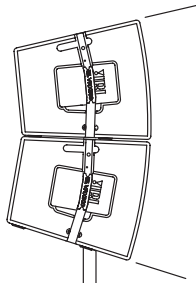


### **Single VRX932LA**

A single VRX932LA may be used on a tripod stand (JBL SS2BK) or on a pole over a subwoofer (JBL SS4BK and SRX718S). The use of a subwoofer is recommended for applications requiring more low-frequency power and extension. Usually, the Array Configuration Selector (ACS) switches on the input panel should be set to the "Short Throw (-3 dB)" position when a single speaker is used.

The VRX932LA includes a dual angle pole mount socket. By selecting the appropriate pole socket and adjusting the height of the tripod or pole, optimum coverage may be achieved. Ideally, the audience should not be able to see either the bottom or the top surfaces of the speaker. This will insure that all listeners are within the "included coverage angle" of the loudspeaker. The rear pole-socket will position the speaker with the baffle 2.5° to the floor while the forward socket will position the speaker with the baffle angled down by 15°. System illustration shows available JBL SS2BK tripod stand.

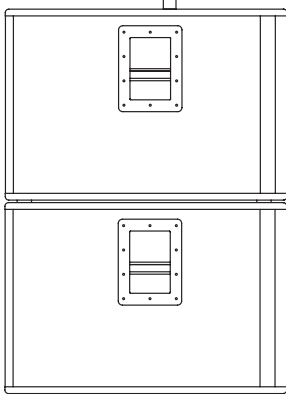




**Dual VRX932LA**

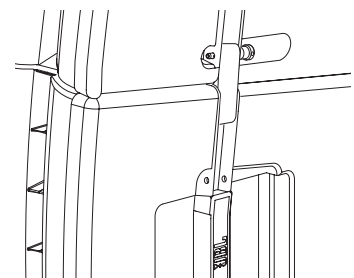
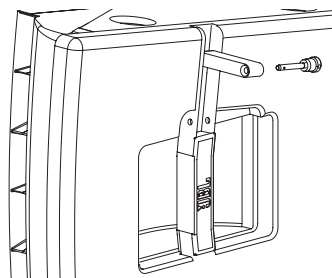
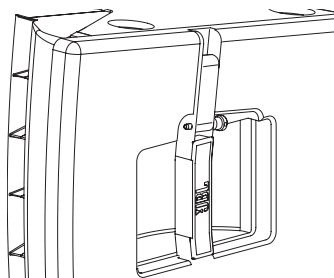
Unlike most conventional speakers, the VRX932LA is designed so that a pair of speakers may be safely mounted onto a pole or tripod stand. For most applications, the forward socket of the dual angle pole socket will be used. This will tilt the lower of the two speakers at a 15° down-angle (providing coverage of the near listeners) while the upper speaker will face straight out (covering the more distant areas). Ideally, the listeners should not be able to see either the bottom or the top surfaces of the two-speaker array. Usually, the Array Configuration Selector (ACS) switches on the lower speaker's input panel should be set to the "Short Throw (-3 dB)" position while the upper speaker will be set to either "Short Throw (-3 dB)" or "Mid Throw (0 dB)".

Place the speakers on the pole or tripod one at a time. Be sure to lock the two speakers together using the integral rigging hardware (see below). System illustration shows available JBL SS4BK speaker pole and SRX718S subwoofers. **Do not stack more than two VRX932LA speakers on a pole.**



**Locking (2) VRX932LA Loudspeakers Together**

Any time two or more VRX932LAs are arrayed together, they must be mechanically secured to each other using the integral rigging frame and supplied quick release pins. **WARNING: Only the correct quick release pins supplied by JBL are to be used**



**SUSPENSION SAFETY WARNINGS!**

Correct use of all rigging hardware is required for secure system suspension. Careful calculations should always be performed to ensure that all components are used within their working load limits before the array is suspended. Never exceed the maximum recommended load ratings. Prior to suspending the system, an expert, trained and experienced in flying speaker systems should be consulted.

**Inspection & Maintenance**

Before suspending or pole mounting any speaker system always inspect all components (enclosure, rigging frames, pins, eyebolts, track fittings, etc.) for cracks, deformations, corrosion, missing, loose or damaged parts that could reduce strength and safety of the array. Do not suspend or pole mount the speaker until the proper corrective action has been taken. Installed systems should be inspected at least annually. The inspection shall include a visual survey of all corners and load bearing surfaces for signs of cracking, water damage, de-lamination, or any other condition that may decrease the strength of the loudspeaker enclosure. Accessory rigging hardware provided with or for the JBL VRX932LA loudspeaker must be inspected for fatigue at least annually or as required by local ordinance. For all other hardware and fittings, refer to the hardware manufacturer's inspection and maintenance guidelines for process.

**Are You New to Rigging?**

If you are new to rigging, you should do the following:

- Read and study JBL Technical Note Volume 1, Number 14: Basic Principles for Suspending Loudspeaker Systems (available at [http://www.jblpro.com/pub/technote/tn\\_v1n14.pdf](http://www.jblpro.com/pub/technote/tn_v1n14.pdf)).
- Know the rules for safe rigging.
- Attend a safe rigging seminar, such as that presented by professionals like Rigging Seminars™ ([www.riggingseminars.com](http://www.riggingseminars.com)) or by Chain Motor Hoist manufacturers like Columbus McKinnon Corp. (manufacturers of the C/M Lodestar).
- Meet and establish a relationship with a licensed mechanical or structural engineer. Get in the habit of asking them questions instead of guessing about their answers. Learn from what they tell you.
- Meet and discuss this aspect of your business with your Insurance Agent.
- Research and understand the codes, practices, and requirements in the venues where you intend to operate your sound system.

**Attachment to Structures**

A licensed Professional Engineer must approve the placement and method of attachment to the structure prior to the installation of any overhead object. The following performance standards should be provided to the Professional Engineer for design purposes; Uniform Building Code as applicable, Municipal Building Code as applicable, and Seismic Code as applicable. The installation of the hardware and method of attachment must be carried out in the manner specified by the Professional Engineer. Improper installation may result in damage, injury or death.

JBL is not responsible for the application of its products for any purpose or the misuse of this information for any purpose. Furthermore, JBL is not responsible for the abuse of its products caused by avoiding compliance with inspection and maintenance procedures or any other abuse.

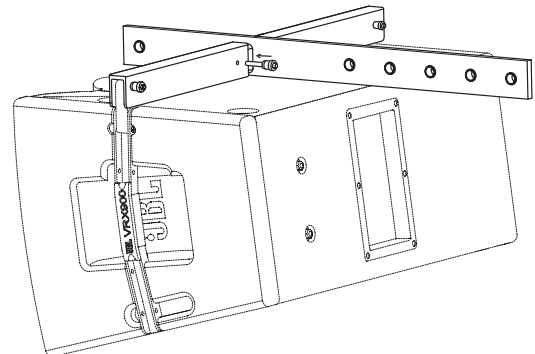
**VRX932LA-AF Array Frame**

The VRX932LA-AF is an array frame kit designed to be used for suspension of the VRX932LA line array loudspeaker. The optional array frame kit includes an array frame, quick release pins, a pair of forged 3/8" shackles, and a set of drop levers.

**Working Load Limit**

The VRX932LA-AF is designed for suspension of no more than six (6) VRX932LA speakers. The WLL (Working Load Limit) for the VRX932LA-AF array frame is 136 kg (300 lb) at a 10:1 Design Factor. The WLL is calculated as follows:

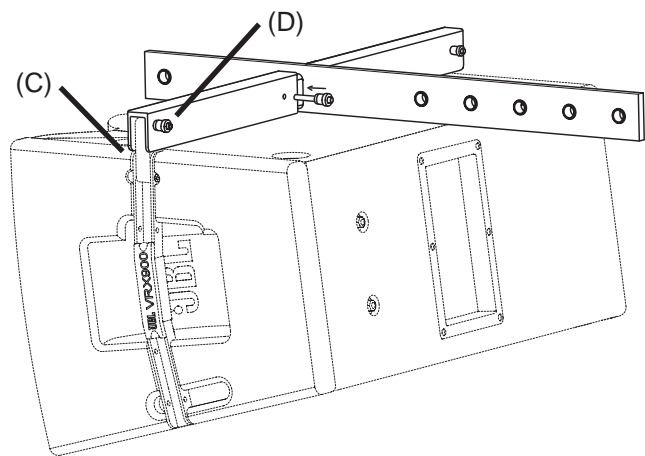
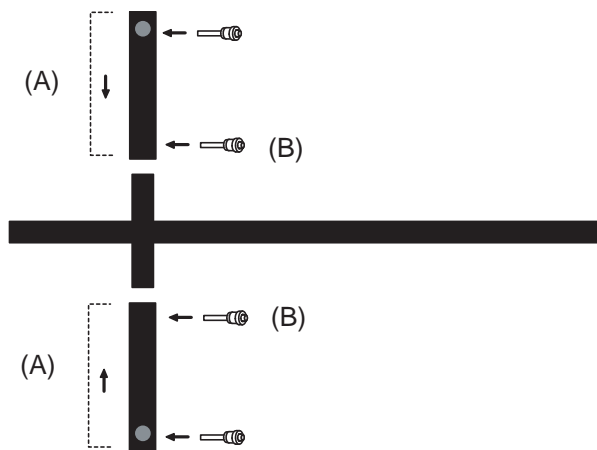
$$\text{WLL (Rated Capacity)} = \frac{\text{Nominal Material Yield Strength}}{\text{Design Factor}}$$



### Installing the Array Frame

Suspension of the VRX932LA requires the VRX932LA-AF Array Frame **[Warning: Do not use any substitute for VRX932LA-AF Array Frame]**. This device is attached to the VRX932LA's integral rigging using the provided Quick Release Pins **[Warning: Do not use any substitute for these pins]**. Up to six (6) VRX932LA speakers may be suspended from a single array frame.

1. Begin by attaching the two side arms (A) to either side of the center frame. Use a pair of the provided Quick Release Pins (B) to attach the arms to the frame. *Note:* Side arms should be attached with the rubber bumper facing up and away from the center frame. The center frame is installed with the rubber gasket toward the enclosure and the label right side up.
2. Place the entire array frame on top of the VRX932LA and flip up the drop levers (C) found on both sides of the speaker to be received by the array frame arms.
3. Once the drop levers on the speaker are received by the array frame, use a pair of the provided Quick Release Pins (D) to attach the drop levers to the array frame.



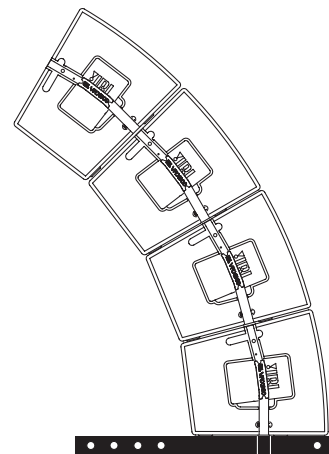
### Adding a Second Array Frame for Pullback

For some applications, it may be necessary to pull back the array from the bottom in order to achieve the desired coverage. Every VRX932-AF is supplied with a spare set of Quick Release Pins pins and a pair of spare drop levers that are used to adapt a second array frame to the bottom of a VRX932LA array. Once these are installed on the bottom enclosure, the array frame may be attached as previously described.

### Ground-Stacked, Upward Firing Arrays

Applications such as covering stadium bleachers from the playing field may be addressed by installing the VRX932-AF array frame to the bottom of the array as described in "Adding a Second Array Frame for Pullback."

Up to four VRX932LA loudspeakers may be locked together and ground stacked using the VRX932LA-AF array frame kit, as shown. **[Warning: Do not ground stack more than four VRX932LA loudspeakers in one array]**. When ground stacking VRX932LA loudspeakers, use the VRX932LA-AF array frame as the base (as shown) by attaching the loose drop levers, included in the array frame kit, to the lower rigging bar on the VRX932LA loudspeaker. When stacking the loudspeakers together, make sure each loudspeaker is locked together. Be certain that the surface on which the system is to be stacked is flat, stable and solid.



# JBL WARRANTY AND CONTACTS

## **Who Is Protected by This Warranty?**

Your JBL Warranty protects the original owner and all subsequent owners so long as: A.) Your JBL product has been purchased in the Continental United States, Hawaii or Alaska. (This Warranty does not apply to JBL products purchased elsewhere except for purchases by military outlets. Other purchasers should contact the local JBL distributor for warranty information.); and B.) The original dated bill of sale is presented whenever warranty service is required.

## **What does the JBL Warranty cover?**

Except as specified below, your JBL Warranty covers all defects in material and workmanship. The following are not covered: Damage caused by accident, misuse, abuse, product modification or neglect; damage occurring during shipment; damage resulting from failure to follow instructions contained in your Instruction Manual; damage resulting from the performance of repairs by someone not authorized by JBL; claims based upon any misrepresentations by the seller; any JBL product on which the serial number has been defaced, modified or removed.

## **Who Pays for What?**

JBL will pay all labor and material expenses for all repairs covered by this warranty. Please be sure to save the original shipping cartons because a charge will be made if replacement cartons are requested. Payment of shipping charges is discussed in the next section of this warranty.

## **How to Obtain Warranty Performance**

If your JBL product ever needs service, write or telephone us at JBL Incorporated (Attn: Customer Service Department), 8500 Balboa Boulevard, PO. Box 2200, Northridge, California 91329 (818/893-8411). We may direct you to an authorized JBL Service Agency or ask you to send your unit to the factory for repair. Either way, you'll need to present the original bill of sale to establish the date of purchase. Please do not ship your JBL product to the factory without prior authorization. If transportation of your JBL product presents any unusual difficulties, please advise us and we may make special arrangements with you. Otherwise, you are responsible for transporting your product for repair or arranging for its transportation and for payment of any initial shipping charges. However, we will pay the return shipping charges if repairs are covered by the warranty.

## **Mailing Address:**

JBL Professional  
8500 Balboa Blvd.  
Northridge, CA 91329 USA

## **Outside the USA:**

Contact the JBL Professional Distributor in your area. A complete list of JBL Professional international distributors is provided at our U.S.A. website - [www.jblpro.com](http://www.jblpro.com)

## **Shipping Address:**

JBL Professional  
8370 Balboa Blvd., Dock D  
Northridge, CA 91329 USA  
(Do not return product to this address without first obtaining prior authorization from JBL)

## **Product Registration:**

Register your product online at [www.jblpro.com/registration](http://www.jblpro.com/registration)

## **Customer Service:**

Monday through Friday  
8:00am - 5:00pm  
Pacific Standard Time In the U.S.A.  
(800) 8JBLPRO (800.852.5776)  
[www.jblproservice.com](http://www.jblproservice.com)

## **On the World Wide Web:**

[www.jblpro.com](http://www.jblpro.com)

